jjh

Flex Duct Insulation

California Building Energy Efficiency Standards
Revisions for July 2003 Adoption

November 5, 2001

Description

The current Standards require flex duct be R-4.2 with a polyethylene jacket. It makes no sense to require a home to have R-19 walls, but only R-4 ducting. When the HVAC system is operating, the ducting typically experiences two to three times the temperature differential as does the house. And, for ducting in an attic, winter heating losses continue when the HVAC system is off, as convection tends to dump cold air out of the supply registers.

R-8.0 flex ducting exists, optionally with a metalized jacket reflective to radiant gains. This product is readily available from several manufacturers.

The Standards should require flex duct with R-8.0 insulation and a metalized jacket for all applications outside of the conditioned space. This change should apply to all buildings, both residential and commercial.

Benefits

This measure will result in reduced heating and cooling energy. As 10%-30% of a cooling system's energy can be lost through ducting, this measure may also allow for smaller equipment in some cases.

As this measure will reduce peak energy usage, time dependent valuation (TDV) is expected to increase the reported benefits.

Environmental Impact

No significant environmental impact has been identified.

Type of Change

Mandatory Measure	The change would add or modify a mandatory measure. Mandatory measures must be satisfied with either the prescriptive or performance compliance methods.

The proposed change modifies the scope of the Standards to require the maximum R-value available in ducting, rather than the minimum. No trade-offs should be allowed. This change would affect the Standards, manuals, and compliance forms.

Measure Availability and Cost

R-8.0 insulation is already required by several other states in their energy standards. Costs have not yet been identified.

Useful Life, Persistence and Maintenance

As this measure requires higher quality ducting than is commonly installed, the life is expected to be at least as long as the ducting currently allowed.

The energy savings can be expected to persist for the life of the ducting.

Performance Verification

This measure would be an additional item to verify in the plans and building inspection.

Cost Effectiveness

Cost effectiveness has not been established at this time.

Analysis Tools

The DOE-2.2 program is capable of modeling duct air losses and thermal losses in unconditioned spaces.

Relationship to Other Measures

This measure is not related to any other measures.

Bibliography and Other Research

Currently, this submittal is intended as a place holder to identify this topic as a subject that the Standards do not address. Further study will be required to develop the proposed regulations; however no funding has been identified for this study. The Commission has also received input directly from manufacturers of flex ducting.